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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,234	03/08/2004	Chuanfu Wang	BYD-US2003-011	1738

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EMIL CHANG
LAW OFFICES OF EMIL CHANG
874 JASMINE DRIVE
SUNNYDALE, CA 94086

EXAMINER

MURALIDAR, RICHARD V

ART UNIT PAPER NUMBER

2838

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

10/796,234

Applicant(s)

WANG ET AL.

Examiner

Richard V. Muralidar

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 4 and 5 recite, "said battery protective circuit and said battery core are elongated and oval shaped." It is not clear whether applicant means the circuit *board* is oval, or the circuit itself is oval. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-7, 9, and 11-15 are rejected under 35 U.S.C. 102[e] as being anticipated by Kozu et al [U.S. 2005/0064286].

With respect to Claim 1, Kozu et al discloses a rechargeable battery [Fig. 2, lithium ion rechargeable battery 2], comprising: a cover having two ends [Fig. 5a, 5b, and 11; sealing plate 23, along with resin mold 11 and circuit substrate 3 comprises the

Art Unit: 2838

cover that covers the battery], said cover having a plurality of contact openings [Fig. 5b, electrical contacts 6], and a plurality of test openings [Fig. 5b, test terminal 30]; a battery core [Fig. 2, rechargeable battery 2 inside aluminum case 22], wherein said battery core having an outer shell [Fig. 2, the aluminum case 22] and a top-side plate [Fig. 3a, sealing plate 23] welded to said outer shell [par. 0064 lines 1-6 sealing plate 23 is welded to aluminum case 22 to seal the battery in] to seal said battery core, and said top-side plate having a terminal [Fig. 3a, negative terminal], a release valve [Fig. 3a, safety vent 20 and 20a; par. 0070 lines 7-13 safety vent 20 prevents explosion due to excessive internal pressure], and a fill hole [Fig. 2, plug 27; par. 0070 lines 14-17 plug 27 is for pouring electrolyte into case 22]; a battery protective circuit on a PCB [Fig 4a, 4b, 4c, par. 0067 circuit board 3 has overcharge, over-discharge, and over current protection], said PCB on a first side having contact points for making contact with said battery [Fig. 4a, electrical contacts 6] and test points [Fig. 4a, test terminals 30; par. 0072 lines 4-7] for testing said battery, and said PCB on a second side having at least one contact structure [Fig. 4b, positive and negative solder lands 32 and 33; par. 0072 lines 7-10] for electrically conducting said battery protective circuit with said battery core, wherein said battery protective circuit is inserted in said cover [circuit board 3 is apart of the battery cover which comprises sealing plate 23, along with resin mold 11; circuit board 3 is attached to sealing plate 23 and insulated/spaced by resin mold 11]; and wherein said cover and said battery protective circuit are secured on to said battery core to form an integrated battery [Fig. 5a and 5b; par. 0064 lines 1-11;

par. 0069 circuit board 3 is secured to sealing plate 23 which is welded to the battery's case 22].

With respect to Claims 3 and 11, Kozu discloses said battery protective circuit interacts [par. 0072 lines 1-4, interaction occurs via positive terminal 4 and negative terminal 5] with a safety unit [Fig. 3c, temperature fuse 10] connected between said battery core and said battery protective circuit [Fig. 11, temperature fuse 10 is between battery core 2 and circuit board 3; par. 0069], said safety unit providing a temperature detection function [par. 0004 lines 13-24, the fuse material detects excessive temperature and opens in a well known manner to protect the battery].

With respect to Claims 4, 5, 12, and 13, Kozu discloses said cover, said battery protective circuit and said battery core are elongated oval shaped [par. 0064 lines 1-5; Figs. 3a-3c, rechargeable battery 2 is elongated oval shaped. The shape of the circuit and battery core is oval since the circuit is on the battery].

With respect to Claims 6 and 14, Kozu discloses said cover is separately [the cover is formed into one piece; par. 0069] made from rubber or plastic [sealing plate 23, along with resin mold 11 and circuit substrate 3 comprises the cover that covers the battery. These components are held in place and resin is injected to form the cover of the battery. Resin is plastic]; using an injection molding method [par. 0078 resin is injected into the mold to form the cover].

With respect to Claims 7 and 15, Kozu discloses there are position notches [Fig. 11, the notches are resin-formed from the primary mold 11 and protrude into the center holes created by engaging members 26] on the bottom of said cover and there are

Art Unit: 2838

position holes [Fig. 11, the holes in the center of engaging members 26 are position holes to lock the cover in place] on said top-side plate, wherein said position notches, when coupled with said position holes, positions said cover on to said battery core.

With respect to Claim 9, Kozu discloses that a structural support [Fig. 11, the primary mold 11 is the structural support that ties the individual pieces of the cover together] is placed between said battery core and said battery protective circuit [Fig. 11, protective circuit components 31 are held in the primary mold 11 which is between the battery core 2 and circuit board 3], wherein said structural support and said cover encasing said battery protective circuit.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103[a] which forms the basis for all obviousness rejections set forth in this Office action:

[a] A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 10, 17-20, and 22 are rejected under 35 U.S.C. 103[a] as being unpatentable over Kozu et al [U.S. 2005/0064286] in view of Law et al [U.S. 6824919].

With respect to Claims 2, 10, 17-20, and 22, Kozu teaches a rechargeable battery with a top-side plate, but does not specify the thickness of the plate.

Law teaches a battery housing for lithium batteries wherein a top-side plate has a 0.3 mm-0.6 mm thickness [Fig. 1, top side plate 104 serves to cover the top of the battery and is formed in a similar manner, and has its thickness illustrated as 108. The

cover and the sides are both injected molded using resin, over metal- col. 2 lines 59-62. Therefore both the top side-plate and the walls will be subject to the same mechanical limitations imposed by a resin structure of a certain thickness, whether forming the cover or the sidewalls. It is known that resin injection molding is subject to a certain minimum thickness because of mechanical limitations, as shown in col. 1 lines 39-46. Prior to Law, the experimental limitation was 0.7 mm, as shown in col. 2 lines 28-31. Law's invention established a new lower limit of 0.2 mm for the thickness of dimension 108 of top-side plate 104, as shown in col. 3 lines 25-27. Taken together, this establishes a minimum workable range of 0.2 mm to 0.7 mm, which is completely inclusive of applicant's 0.3 mm to 0.6 mm range].

Kozu and Law are analogous battery housings for lithium batteries made by injection-molded resin. At the time of the invention it would have been obvious to one of ordinary skill in the art to specify a minimum workable range of thickness to the top-side plate because it is desirable to make *all* the walls, including the top-side wall, as thin as possible for cost savings and to reduce the size of the electronic components [Law, col. 1 lines 49-51]. At the same time, it is known that the walls cannot be made too thin, or the battery will fall apart easily [Law, col. 1 lines 39-46].

With respect to Claim 17, A rechargeable battery [Fig. 2, lithium ion rechargeable battery 2], comprising: a cover having an elongated shape with two opposite ends [Fig. 5a, 5b, and 11; sealing plate 23, along with resin mold 11 and circuit substrate 3 comprises the cover that covers the battery and has an overall elongated shape as shown in Fig. 2], said cover having one or more contact openings [Fig. 5b, electrical

Art Unit: 2838

contacts 6], and one or more test openings [Fig. 5b, test terminal 30]; a battery core [Fig. 2, rechargeable battery 2 inside aluminum case 22] having an elongated shape substantially matching the shape of said cover [as shown in Fig. 2], wherein said battery core having a metal outer shell [par. 0064 lines 1-4], and a top-side plate [Fig. 3a, sealing plate 23] welded to said outer shell to seal said battery core [par. 0064 lines 1-6 sealing plate 23 is welded to aluminum case 22 to seal the battery in]; wherein said top-side plate having disposed thereon a terminal [Fig. 3a, negative terminal], a release valve [Fig. 3a, safety vent 20 and 20a; par. 0070 lines 7-13 safety vent 20 prevents explosion due to excessive internal pressure], and a fill hole [Fig. 2, plug 27; par. 0070 lines 14-17 plug 27 is for pouring electrolyte into case 22]; a battery protective circuit on a PCB [Fig 4a, 4b, 4c, par. 0067 circuit board 3 has overcharge, over-discharge, and over current protection], said PCB on a first side having contact points for contacting said battery [Fig. 4a, electrical contacts 6] and test points [Fig. 4a, test terminals 30; par. 0072 lines 4-7] for testing said battery, and said PCB on a second side having at least one contact structure [Fig. 4b, positive and negative solder lands 32 and 33; par. 0072 lines 7-10] for electrically conducting said battery protective circuit with said battery core, wherein said battery protective circuit is inserted in said cover [circuit board 3 is apart of the battery cover which comprises sealing plate 23, along with resin mold 11; circuit board 3 is attached to sealing plate 23 and insulated/ spaced by resin mold 11]; a structural support [Fig. 11, the primary mold 11 is the structural support that ties the individual pieces of the cover together] placed between said battery core and said battery protective circuit [Fig. 11, protective circuit

Art Unit: 2838

components 31 are held in the primary mold 11 which is between the battery core 2 and circuit board 3], said structural support and said cover encasing said battery protective circuit; wherein said cover and said battery protective circuit are secured on to said battery core to form an integrated battery [Fig. 5a and 5b; par. 0064 lines 1-11; par. 0069 circuit board 3 is secured to sealing plate 23 which is welded to the battery's case 22 to form an integrated battery]; and wherein said battery core having positive and negative terminals connected to said battery protective circuit and, through said battery protective circuits, to said contact points exposed through said cover [par. 0072]. Kozu does not teach specifically that the top-side plate has a thickness of 0.3 mm-0.6 mm [see above for motivation for Claims 2, 10, 17-20, and 22].

With respect to Claim 18, Kozu teaches said battery protective circuit interacts [par. 0072 lines 1-4, interaction occurs via positive terminal 4 and negative terminal 5] with a safety unit [Fig. 3c, temperature fuse 10] connected between said battery core and said battery protective circuit [Fig. 11, temperature fuse 10 is between battery core 2 and circuit board 3; par. 0069], said safety unit providing a temperature detection function [par. 0004 lines 13-24, the fuse material detects excessive temperature and opens in a well known manner to protect the battery].

With respect to Claim 19, Kozu teaches said cover and said structural support are connected by a hinge [par. 0069; Fig. 5a and 5b, positive and negative lead plates 4 and 5 are used to secure circuit board 3 to sealing plate 23 in a hinge like manner] and said cover, said structural support and said hinge are injection molded as a single

unit [Fig. 11, primary mold 11 is formed by resin injection molding and holds the integrated cover with hinge to the sealing plate 23].

With respect to Claim 20, Kozu discloses there are position notches [Fig. 11, the notches are resin-formed from the primary mold 11 and protrude into the center holes created by engaging members 26] on the bottom of said cover and there are position holes [Fig. 11, the holes in the center of engaging members 26 are position holes to lock the cover in place] on said top-side plate, wherein said position notches, when coupled with said position holes, positions said cover on to said battery core.

With respect to Claim 22, A rechargeable battery [Fig. 2, lithium ion rechargeable battery 2], comprising: a cover having an elongated shape with two opposite ends [Fig. 5a, 5b, and 11; sealing plate 23, along with resin mold 11 and circuit substrate 3 comprises the cover that covers the battery and has an overall elongated shape as shown in Fig. 2], said cover having one or more contact openings [Fig. 5b, electrical contacts 6], and one or more test openings [Fig. 5b, test terminal 30]; and a securable cap [Fig. 1, cap 12]; a battery core [Fig. 2, rechargeable battery 2 inside aluminum case 22] having an elongated shape substantially matching the shape of said cover [as shown in Fig. 2], wherein said battery core having a metal outer shell [par. 0064 lines 1-4], and a top-side plate [Fig. 3a, sealing plate 23] welded to said outer shell to seal said battery core [par. 0064 lines 1-6 sealing plate 23 is welded to aluminum case 22 to seal the battery in]; wherein said top-side plate having disposed thereon a terminal [Fig. 3a, negative terminal], a release valve [Fig. 3a, safety vent 20 and 20a; par. 0070 lines 7-13 safety vent 20 prevents explosion due to excessive internal pressure], and a

Art Unit: 2838

fill hole [Fig. 2, plug 27; par. 0070 lines 14-17 plug 27 is for pouring electrolyte into case 22]; a battery protective circuit on a PCB [Fig 4a, 4b, 4c, par. 0067 circuit board 3 has overcharge, over-discharge, and over current protection], said PCB on a first side having contact points for contacting said battery [Fig. 4a, electrical contacts 6] and test points [Fig. 4a, test terminals 30; par. 0072 lines 4-7] for testing said battery, and said PCB on a second side having at least one contact structure [Fig. 4b, positive and negative solder lands 32 and 33; par. 0072 lines 7-10] for electrically conducting said battery protective circuit with said battery core, wherein said battery protective circuit is inserted in said cover through the opening created by said cap [Figs. 1 and 2, the circuit board 3 which is apart of the battery cover which comprises sealing plate 23, along with resin mold 11 and the battery protective circuit, are inserted up into the opening of the underside of the cap upon final assembly]; a structural support integrated and injection molded with said cover and said cap [Fig. 11, the primary mold 11 is the structural support that ties the individual pieces of the cover together inside of the upper mold 12 that is the cap shown in Fig. 1], and disposed between said battery core and said battery protective circuit, said structural support, said cover, and said cap encasing said battery protective circuit [Fig. 2, upper mold/ cap 12 encases circuit board 3 with the battery protective circuit]; and wherein said cover and said battery protective circuit are secured on to said battery core to form an integrated battery [Fig. 5a and 5b; par. 0064 lines 1-11; par. 0069 circuit board 3 is secured to sealing plate 23 which is welded to the battery's case 22 to form an integrated battery]; and wherein said battery core having positive and negative terminals connected to said battery

protective circuit, and, through said battery protective circuit, connected to said contact points exposed through said cap [Fig. 1, contacts points 6 is internally connected in such a manner; par. 0072]. Kozu does not teach specifically that the top-side plate has a thickness of 0.3 mm-0.6 mm [see above motivation for Claims 2, 10, 17-20, and 22].

With respect to Claim 23, Kozu discloses said battery protective circuit interacts [par. 0072 lines 1-4, interaction occurs via positive terminal 4 and negative terminal 5] with a safety unit [Fig. 3c, temperature fuse 10] connected between said battery core and said battery protective circuit [Fig. 11, temperature fuse 10 is between battery core 2 and circuit board 3; par. 0069], said safety unit providing a temperature detection function [par. 0004 lines 13-24, the fuse material detects excessive temperature and opens in a well known manner to protect the battery].

With respect to Claim 24, Kozu discloses there are position notches [Fig. 11, the notches are resin-formed from the primary mold 11 and protrude into the center holes created by engaging members 26] on the bottom of said cover and there are position holes [Fig. 11, the holes in the center of engaging members 26 are position holes to lock the cover in place] on said top-side plate, wherein said position notches, when coupled with said position holes, positions said cover on to said battery core.

Claims 8 and 16 are rejected under 35 U.S.C. 103[a] as being unpatentable over Kozu et al [U.S. 2005/0064286] in view of Hovi et al [U.S. 6803114].

With respect to Claims 8 and 16, Kozu teaches a rechargeable battery with cover and top-side plate, but does not teach that screw fasteners are used to connect the cover to the top-side plate.

Hovi teaches a battery pack with a cover, wherein there is a screw opening on each end of said cover [Fig. 5, screw openings 171, 173] and there is a screw holes on each end of said top-side plate [Fig. 5, threaded screw holes 152 and 154; col. 7 lines 1-4]; a screw [Fig. 5, screws 172 and 173] fastens said cover onto said top-side plate using said screw opening and said screw hole.

Kozu and Hovi are analogous rechargeable battery packs for cell-phones with methods of making the housing and cover structures. At the time of the invention it would have been obvious to one of ordinary skill in the art to use screws to secure the cover to the top-plate for the benefit of being able to remove and take apart the cover at a later date for maintenance, refurbishment, or component replacement purposes. Using screws as a non-permanent fastener is widely known in the art.

Claims 21 and 25 are rejected under 35 U.S.C. 103[a] as being unpatentable over Kozu et al [U.S. 2005/0064286] in view of Law [U.S. 6824919], as applied to claims 17 and 22 respectively, further in view of Hovi et al [U.S. 6803114].

With respect to Claims 21 and 25, Kozu teaches a rechargeable battery with cover and top-side plate, but does not teach that screw fasteners are used to connect the cover to the top-side plate.

Hovi teaches a battery pack with a cover, wherein there is a screw opening on each end of said cover [Fig. 5, screw openings 171, 173] and there is a screw holes on each end of said top-side plate [Fig. 5, threaded screw holes 152 and 154; col. 7 lines 1-4]; a screw [Fig. 5, screws 172 and 173] fastens said cover onto said top-side plate using said screw opening and said screw hole.

Kozu and Hovi are analogous rechargeable battery packs for cell-phones with methods of making the housing and cover structures. At the time of the invention it would have been obvious to one of ordinary skill in the art to use screws to secure the cover to the top-plate for the benefit of being able to remove and take apart the cover at a later date for maintenance, refurbishment, or component replacement purposes. Using screws as a non-permanent fastener is widely known in the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Prior art [U.S.6861821] by Masumoto et al is cited for the disclosure of lithium rechargeable battery pack with protection circuit, and resin formed injection molded cover and housing. Prior art [U.S.6492058] by Watanabe et al is cited for the disclosure of a rechargeable battery having a protection circuit that is molded into a one package unit with the battery case. Prior art [U.S.2002/0142195] by Ehara is

Art Unit: 2838

cited for the disclosure of a battery pack with circuitry and cover molded into one housing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard V. Muralidar whose telephone number is 571-272-8933. The examiner can normally be reached on Monday to Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Gray can be reached on Monday to Friday 8-5. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RVM
5/11/2006


KARL EASTHOM
SUPERVISORY PATENT EXAMINER